The Small Mammals of Alaska

A Field Handbook of the Shrews and Small Rodents

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Checklist of the Shrews and Small Rodents of Alaska

INSECTIVORA - Shrews

Soricidae

Sorex alaskanus, Glacier Bay water shrew
Sorex cinereus, cinereus shrew
Sorex hoyi, pygmy shrew
Sorex hydrodromus, Pribilof Island shrew
Sorex jacksoni, St. Lawrence Island shrew
Sorex monticolus, montane shrew
Sorex palustris, water shrew
Sorex tundrensis, tundra shrew
Sorex ugyunak, barren ground shrew
Sorex yukonicus, tiny shrew

RODENTIA - Rodents

Dipodidae

Zapus hudsonius, meadow jumping mouse
Zapus princeps, western jumping mouse

Muridae

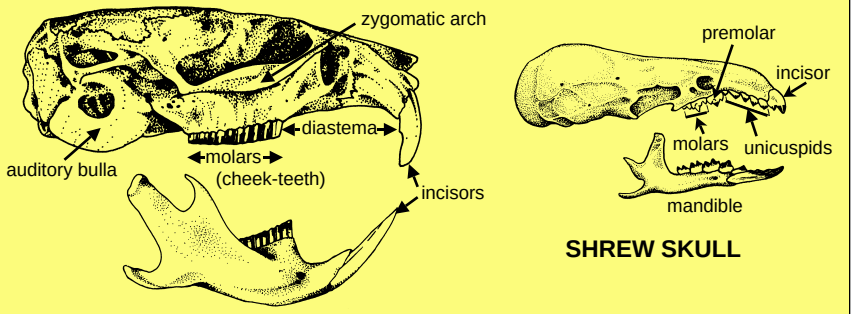
Clethrionomys gapperi, southern red-backed vole
Clethrionomys rutilus, northern red-backed vole
Dicrostonyx groenlandicus, northern collared lemming
Lemmus trimucronatus, brown lemming
Microtus abbreviatus, insular vole
Microtus longicaudus, long-tailed vole
Microtus miurus, singing vole
Microtus oeconomus, tundra vole
Microtus pennsylvanicus, meadow vole
Microtus xanthognathus, taiga vole
Mus musculus, house mouse*
Neotoma cinerea, bushy-tailed woodrat
Peromyscus keeni, Keen's mouse
Peromyscus maniculatus, deer mouse*
Phenacomys intermedius, western heather vole
Rattus norvegicus, brown rat*
Synaptomys borealis, northern bog lemming

* Non-native species

Key to the Orders

• Body very small, snout relatively long and slender pointed, eyes tiny, 5 clawed toes on forefeet; needle-sharp teeth in a continuous row; zygomatic arches and auditory bulla absent ..... **SHREWS** (INSECTIVORA)

• Body larger, snout blunter, 4 clawed toes on forefeet; 2 pairs of large, curved, chisel- like incisor teeth visible in front of the mouth with a large space (diastema) between incisors and the row of cheek-teeth; zygomatic arches and auditory bulla present .... **RODENTS** (RODENTIA)



Key to the Shrews

1. • Only 3 unicuspid teeth clearly visible when viewed from the side (3rd and 5th unicuspids tiny) ..... ***Sorex hoyi*** (p. xx)

• 4-5 unicuspid teeth visible when viewed from the side 2

2. • 3rd unicuspid tooth noticeably smaller than the 4th 3

• 3rd unicuspid tooth equal to or larger than the 4th 4

3. • Total length usually greater than 130 mm; Skull length usually greater than 19 mm; pelage gray-black; fringe of stiff hairs on hind feet ..... ***Sorex palustris*** (p. xx)

• Total length less than 130 mm; Skull length less than 19 mm; pelage brownish; hind feet without fringe of stiff hairs ..... ***Sorex monticolus*** (p. xx)

4. • Post-mandibular canal on the jaw well developed; 3rd unicuspid tooth noticeably larger than 4th; 5th clearly visible and pigmented 5

• Post-mandibular canal absent; 3rd unicuspid tooth equal or nearly equal to 4th; 5th inconspicuous and unpigmented 6

5. • Body tiny (usually less than 80 mm, tail less than 28 mm, hind foot less than 10 mm); 1st unicuspid noticeably larger than 2nd; 2nd about equal to 3rd ; pelage indistinctly tricolored without sharply contrasting dorsal stripe ..... ***Sorex yukonicus*** (p. xx)

• Body much larger (usually greater than 90 mm, tail greater than 30 mm, hind foot greater than 12); 1st unicuspid smaller than 2nd; 2nd noticeably larger than 3rd ; pelage distinctly tricolored with sharply contrasting dorsal stripe ..... ***Sorex tundrensis*** (p. xx)

6. • Found only on islands in the Bering Sea 7

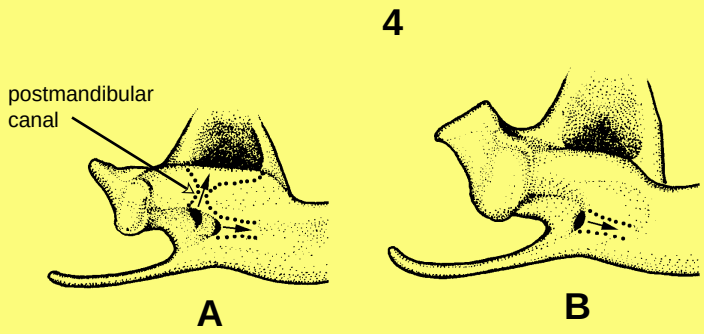
• Not as above 8

7. • Known only from St. Paul, Pribilof Islands ..... ***Sorex hydrodromus*** (p. xx)

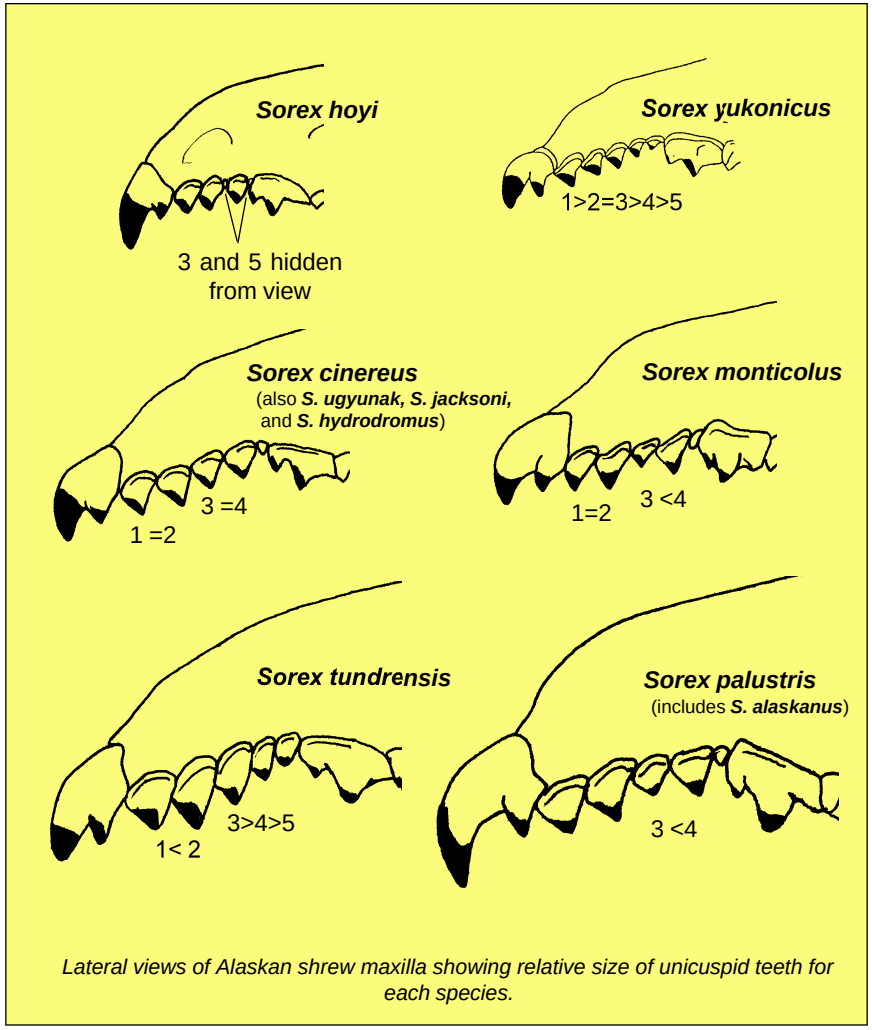
• Known only from St. Lawrence Island ..... ***Sorex jacksoni*** (p. xx)

8. • Skull length usually less than 15 mm; tail short (usually less than 30 mm), light (pale brown above, whitish below), with a blackish terminal tuft; pelage tricolored with light color of underparts extending far up the sides, with brown back forming a well-defined dorsal stripe ..... ***Sorex ugyunak*** (p. xx)

• Skull length usually greater than 15 mm; tail longer (usually greater than 30 mm), darker, and lacking a dark terminal tuft; pelage usually bicolored lacking a distinct dorsal stripe ..... ***Sorex cinereus*** (p. xx)



Lateral view of the postmandibular canal in A) ***Sorex tundrensis*** *and* ***S. yukonicus****, and B) its absence in other Alaskan shrews.*



Lateral views of Alaskan shrew maxilla showing relative size of unicuspid teeth for each species.

SHREW KEY

The Shrews

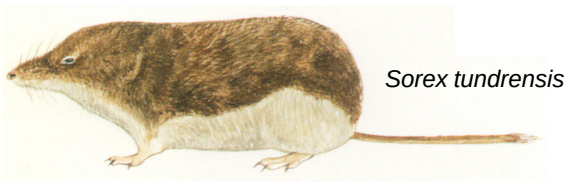
Sorex cinereus

Sorex yukonicus

Sorex ugyunak

Sorex hoyi

Sorex monticolus



Sorex tundrensis

Sorex palustris

INSECTIVORA

Cinereus Shrew

Sorex cinereus

OTHER NAMES. Common shrew, masked shrew.

DESCRIPTION. A small, bicolored shrew with pale brownish back shading gradually into grayish underparts. Winter pelage darker. Snout long and slender. Tail relatively thick, and lacking a distinctive terminal tuft of dark hairs. 1st unicuspid tooth same size as 2nd; 3rd smaller and slightly larger than or equal to the 4th; 5th very tiny (page xx).

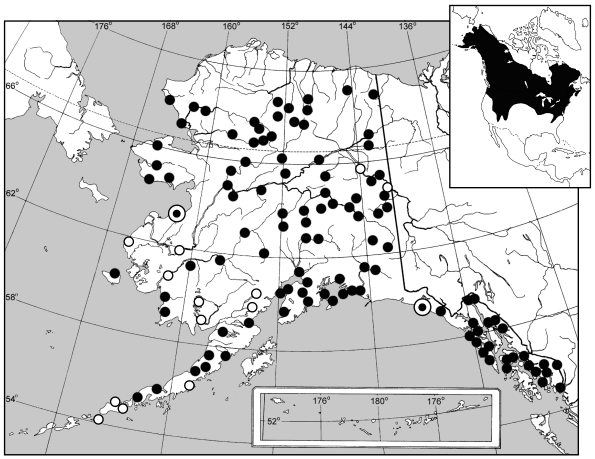
Total length: 82-109 (97) mm
Tail vertebrae: 30-45 (40) mm
Hind foot: 8-13 (12) mm
Weight:: 2.2-5.4 grams

SIMILAR SPECIES. *Sorex ugyunak* has a shorter body and tail, which ends in a dark tuft, and a tricolored rather than bicolored pelage. *S. hoyi* has a shorter, thinner tail, blunter snout, fleshy-colored mouth area, and 3 rather than 4 prominent unicuspid teeth. *S. monticolus* is larger and longer tailed (usually greater than 50 mm), and 3rd unicuspid is noticeably smaller than 4th. *S. yukonicus* is much smaller and shorter tailed (less than 30 mm and ending in dark tuft), and very subtly tricolored.

HABITAT. The cinereus shrew occurs in a wide variety of habitats at various elevations. They prefer damp areas with dense ground cover and an abundance of insects and other small prey.

HABITS. An abundant species, the cinereus shrew is the dominant shrew in most communities across its broad range. Shrews have voracious appetites, which accounts for their continual activity and quick death when deprived of food. Most do not live beyond a year. Pitfall traps are the most efficient method for capturing shrews.

REMARKS. The taxonomic relationship of *cinereus, hydrodromus, jacksoni*, and *ugyunak* have been problematic and are currently considered separate species by most authorities. This species does not occur across the Bering Strait in NE Siberia as previously suggested.



Map 1. Distribution of *Sorex cinereus*

Pygmy Shrew

Sorex hoyi

OTHER NAMES. *Microsorex hoyi*.

DESCRIPTION. A very small, bicolored shrew, grayish-brown above, light gray to brown below. Winter coat more gray than brown and appears slightly tricolored. As in other shrews, *S. hoyi* diminishes in size in winter. Tail short, thin. Snout relatively blunt and area around mouth often appears pink-fleshy. Only 3 unicuspid teeth are clearly visible when viewed from the side, the 3rd and 5th unicuspids extremely reduced and hard to find (page xx).

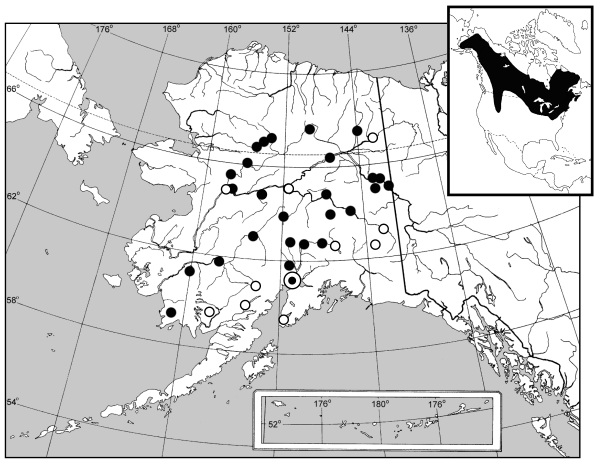
Total length: 71-104 (85.5) mm
Tail vertebrae: 24-35 (30.5) mm
Hind foot: 8-11.5 (10) mm
Weight: 2.4-5.4 grams

SIMILAR SPECIES. All other shrews in Alaska have 4 or 5, rather than 3, prominent unicuspid teeth visible in side view. The externally similar *S. cinereus* has a longer, thicker tail and a more pointed snout. *S. monticolus* is even larger and longer tailed.

HABITAT. A species of the boreal forest, this shrew tolerates a variety of habitats including forests, meadows, shrub thickets, marshes, and bogs.

HABITS. The natural history of this shrew is poorly known. Like other shrew species, the pygmy shrew probably feeds on small arthropods, worms, some carrion and limited amounts of seeds and berries. Apparently they are agile climbers.

REMARKS. The pygmy shrew is uncommon in most communities, although increased use of pitfall trapping methods has found them not nearly as rare as previously believed.



Map 2. Distribution of *Sorex hoyi*

Pribilof Island Shrew

Sorex hydrodromus

OTHER NAMES. *Sorex pribilofensis*.

DESCRIPTION. *S. hydrodromus* is a small, short tailed shrew confined to St. Paul Island, Pribilof Islands, Bering Sea. In summer, pelage is tricolored with a brown back, pale brown sides, and gray underparts. In winter, pelage tends to be bicolored: brown above, gray below. Skull distinctively broad and heavy; dental pattern similar to *S. cinereus* with 3rd unicuspid (U3) somewhat larger than or equal to U4, and U5 tiny.

Total length: 88-107 (97.8) mm
Tail vertebrae: 32-37 (34.8) mm
Hind foot: 12-14 (13.4) mm
Weight: 4-5 grams

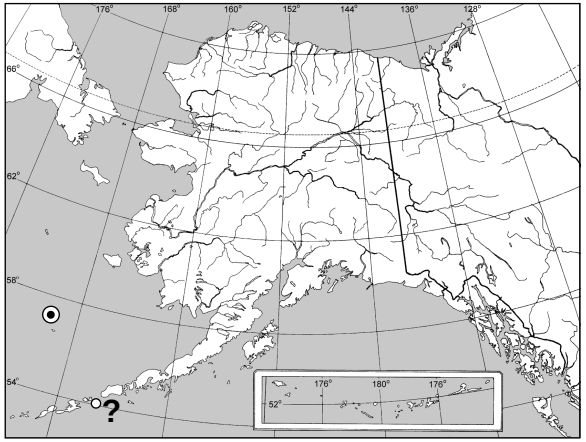
SIMILAR SPECIES. *S. hydrodromus* is the only shrew found on St. Paul Island.

HABITAT. This species has been collected in marshy habitats dominated by beach rye (*Elymus*).

HABITS. Virtually nothing is known of the natural history of this insular species. Populations have, however, been documented to vary considerably between years.

REMARKS. This island endemic has caused considerable confusion and debate over the years in regards to its correct type locality and appropriate scientific name, but the general consensus now is that *hydrodromus* has name priority over *pribilofensis* and, based on morphology, is specifically distinct from other Beringian shrews.

Of interest and worthy of further study (as possibly *S. hydrodromus* or *S. ugyunak*) is a small, tricolored shrew preserved in alcohol at the USNM (246483), supposedly collected in 1925 from west of Unimak Pass on Tigalda Island, one of the Fox Islands group of which Unalaska Island is a member.



Map 3. Distribution of *Sorex hydrodromus*

St. Lawrence Island Shrew

Sorex jacksoni

OTHER NAMES. *Sorex tundrensis jacksoni, S. cinereus jacksoni*.

DESCRIPTION. A small, short-tailed shrew found only on St. Lawrence Island in the Bering Sea. Pelage in summer is tricolored: brown above, pale buffy or grayish sides, grayish below. Skull similar to *S. cinereus* on the Alaska mainland with U3 slightly larger than or equal to U4, and U5 very tiny.

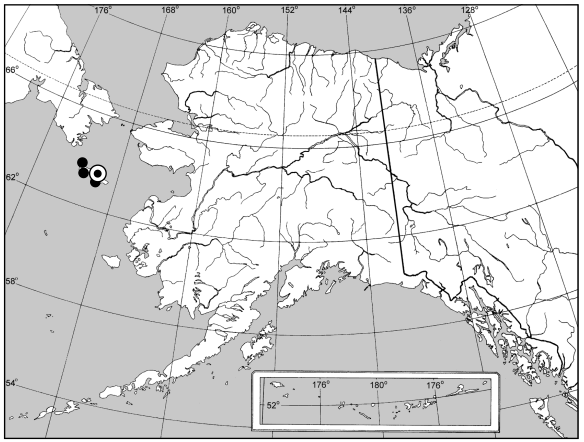
Total length: 89-105 (97) mm
Tail vertebrae: 30-38 (34.7) mm
Hind foot: 11.5-13.5 (12.4) mm
Weight: 4.1-8.8 grams

SIMILAR SPECIES. This is the only shrew found on St. Lawrence Island.

HABITAT. When abundant, they inhabit old village sites and 3 major habitat types on the island: bog-wet tundra, alpine/fell-field tundra, and mesic tundra. When scarce, they are found only in fell-field habitats and boulder scree, especially within auklet nesting colonies. In winter, they often invade human dwellings.

HABITS. This shrew is highly variable in numbers from year to year. Its biology is virtually unknown.

REMARKS. The taxonomic relationship of the St. Lawrence Island shrew with other Beringian shrews has been problematic. It once was considered a separate species in the *arcticus- tundrensis* group of shrews by some authors but, more recently, as a separate species or subspecies in the *cinereus* group by others.



Map 4. Distribution of *Sorex jacksoni*

Montane Shrew

Sorex monticolus

OTHER NAMES. *Sorex obscurus, S. vagrans*; dusky shrew.

DESCRIPTION. A medium-sized, bicolored shrew with gray-brown (summer) to dark brown (winter and coastal populations) back and sides and brown to gray belly. Tail weakly bicolored and relatively long (usually greater than 50 mm). Unicuspids well pigmented; U3 distinctly smaller than U4 (page xx).

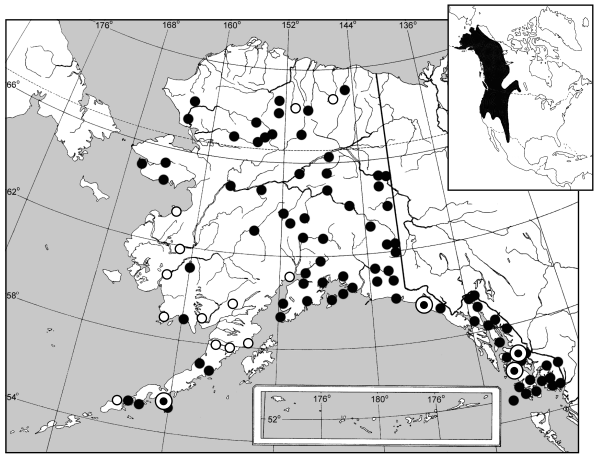
Total length: 95-139 (119) mm
Tail vertebrae: 30-62 (51) mm
Hind foot: 11-16 (13.8) mm
Weight: 4.4-10.2 grams

SIMILAR SPECIES. Most similar to *S. cinereus*, which is usually smaller, shorter tailed (usually less than 46 mm), and with U4 smaller than or equal to U3. *S. hoyi* is another brownish shrew but much smaller and even shorter tailed, with only 3 prominent unicuspids. *S. palustris* also has U3 smaller than U4, but its large size, blackish-gray pelage (never distinctly brown), and restricted water-associated habits easily separates it from this and other shrews.

HABITAT. This shrew is found from coastal and boreal forests to alpine tundra. They tend to favor moist sites with adequate ground cover and an abundance of invertebrate prey.

HABITS. Little is known about the habits of this shrew in Alaska. Other studies have found that only about 4% of the young will survive from their summer of birth to the following summer.

REMARKS. Recent molecular studies of this shrew in northern Southeast Alaska indicate a deep genetic divergence between coastal and continental populations that may be indicative of species-level differentiation.



Map 5. Distribution of *Sorex monticolus*

Water Shrew

Sorex palustris

OTHER NAMES. Navigator shrew, American water shrew, northern water shrew.

DESCRIPTION. A large shrew with velvety fur; blackish-gray above, white or silvery gray below. Scattered silvery white hairs are visible on some individuals. Tail distinctly bicolored. Hind feet large and have a fringe of stiff silvery hairs along outer and inner margins of feet and toes; middle toes partially webbed. Skull large (greater than 19 mm) with 3rd unicuspid smaller than 4th.

Total length: 133-179 (152) mm
Tail vertebrae: 62-88 (75) mm
Hind foot: 16-28 (20) mm
Weight: 7.5-16.4 grams

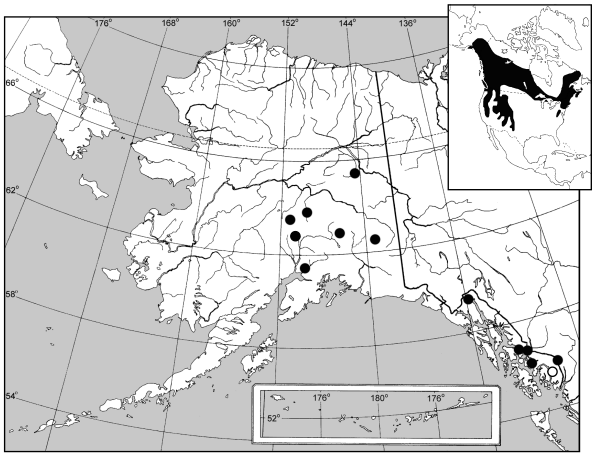
SIMILAR SPECIES. Its large size, blackish-gray pelage (never distinctly brown), and aquatic habits easily separates the water shrew from other species.

HABITAT. This shrew is seldom found far from water-adjacent cover. They occur along lakes, ponds, streams, rivers and marshes where sheltering banks, low vegetation, tree roots or other debris offer protection.

HABITS. The water shrew uses its aquatic habitat to find food and to escape from predators. It readily dives to stream bottoms, its fur silvery from trapped air bubbles. It paddles vigorously to submerge itself; when it stops swimming, it shoots up to the surface and floats well out of the water.

REMARKS. *Sorex alaskanus*, a taxon restricted to Glacier Bay, is probably only a subspecies of *S. palustris*, but the lack of comparative materials has prevented resolution of this issue.

Pitfall and snap traps set close to water, and submerged minnow traps have been used to capture this species.



Map 6. Distribution of *Sorex palustris*

Tundra Shrew

Sorex tundrensis

OTHER NAMES. *Sorex arcticus tundrensis*; arctic shrew, black-backed shrew, tundra saddle-backed shrew.

DESCRIPTION. A medium-sized and stocky shrew distinctively tricolored in summer with a dark brown back, pale-brown or brownish-gray sides, and pale-grayish on the underparts. Winter pelage is longer and bicolored, with the sides and underparts grayish and the back brown. Tail proportionally short (about 30% of total length), bicolored, brownish above, darkening toward tip. Five strongly pigmented unicuspids clearly visible from the side, with U2 larger than U1 and U3, and U3 larger than U4, U4 larger than U5 (page xx).

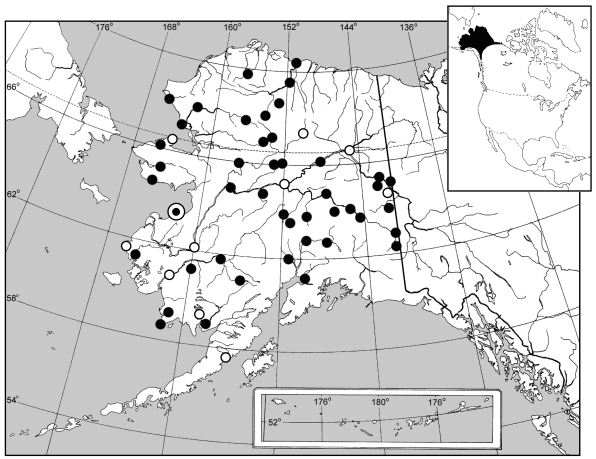
Total length: 83-120 (95) mm
Tail vertebrae: 22-36 (29) mm
Hind foot: 10-13.5 (11.5) mm
Weight: 3.8-10 (6.6) grams

SIMILAR SPECIES. The tricolored *S. ugyunak* of arctic Alaska is much smaller and shorter tailed, with dentition similar to *S. cinereus*.

HABITAT. The tundra shrew inhabits a variety of alpine and arctic habitats as well as forest, shrub, meadow, and mossy bog habitats within the taiga. It seems to favor drier situations than other sympatric shrew species.

HABITS. Little is known about the habits of this shrew. Insects, earthworms, and the floral parts of a small grass were found in the digestive tracts of some tundra shrews from Alaska.

REMARKS. The tundra shrew was once considered a subspecies of *S. arcticus* of boreal Canada, but is since recognized as a distinct Nearctic species.



Map 7. Distribution of *Sorex tundrensis*

Barren Ground Shrew

Sorex ugyunak

OTHER NAMES. *Sorex cinereus ugyunak*.

DESCRIPTION. A small, tricolored shrew with a well-defined brown dorsal strip and buffy colored underparts that extend far up the sides. Winter pelage longer, back brownish, sides gray and underside light gray. Tail relatively short (usually less than 30 mm), light pale brown above, whitish below, with a terminal tuft in ventral view pale buff to light brownish.

Total length: 74-103 (82) mm
Tail vertebrae: 22-31 (26) mm
Hind foot: 10-13.5 (11.5) mm
Weight: 2.9-5.2 grams

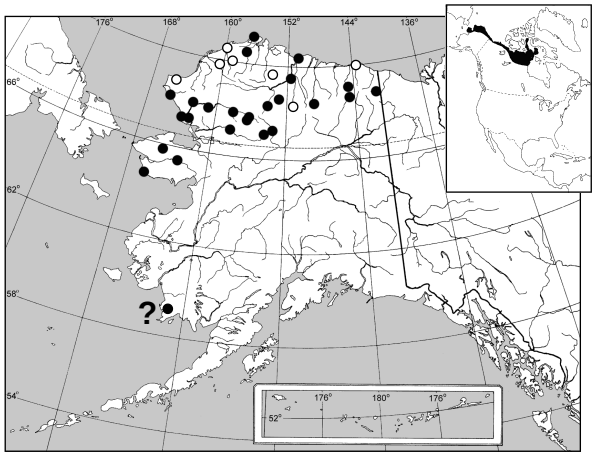
SIMILAR SPECIES. Skull like that of *S. cinereus*, but light color of underside does not extend far up on the side and lacks abrupt demarcation between light- and dark-colored pelage. Similar-looking and perhaps closely related shrews, *S. hydrodromus* and *S. jacksoni*, live on St. Paul and St. Lawrence islands in the Bering Sea. *S. tundrensis*, which has a similar color pattern, is much larger.

HABITAT. This shrew is restricted to arctic coastal tundra habitats, and appears to favor low sedge-grass meadows and thickets of dwarf willow and birch.

HABITS. Little is known of the habits of this species.

REMARKS. The barren ground shrew was formerly included as a subspecies of *S. cinereus*, and one recent study found indications that support this conclusion. Other studies have suggested that *ugyunak* is conspecific with *jacksoni* on St. Lawrence Island, along with one, perhaps two, forms from northwestern Siberia (if confirmed with further research, all names would be subsumed under the name *Sorex jacksoni*).

A small, tricolored shrew from Goodnews Bay (UAM 45794) may be this species. If so, it would extend the range of *S. ugyunak* significantly southward along the Bering Sea coast.



Map 8. Distribution of *Sorex ugyunak*

Tiny Shrew

Sorex yukonicus

OTHER NAMES. None.

DESCRIPTION. A very small (total length less than 80 mm), slightly tricolored shrew, with brownish-gray back, gray sides, and pale smoke gray belly. Tail short (less than 28 mm), bicolored (underside more white than underside of body), with contrasting dark terminal tuft. Hind feet less than 10 mm. Five unicuspids clearly visible: U1 larger than U2; U2 and U3 subequal and larger than U4; U5 smallest but relatively prominent (page xx).

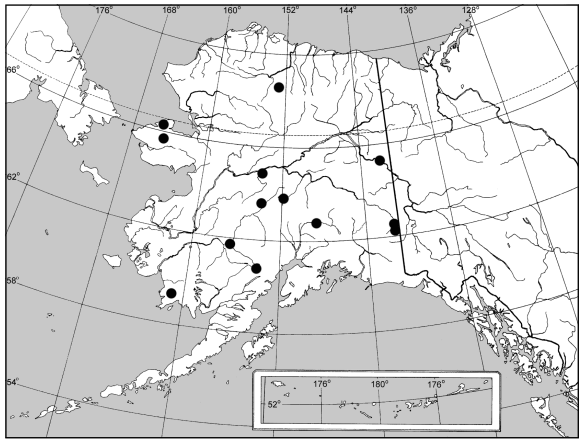
Total length: 66-79 (70) mm
Tail vertebrae: 22-27 (24) mm
Hind foot: 8-9 (8.8) mm
Weight: 1.5-2.3 (1.9) grams

SIMILAR SPECIES. Very similar to, if not conspecific with, *S. minutissimus* in Eurasia. North America's *S. hoyi* is larger, bicolored rather than subtly tricolored, and easily distinguished by its tiny third unicuspid.

HABITAT. The tiny shrew appears to be a widespread, but scarce, inhabitant of the taiga zone of Alaska. A single tiny shrew was captured north of the crest of the Brooks Range in the Fortress Mountains. Limited data (as of 2002, only 30 specimens were known to science) suggest they occupy a diversity of forest, woodland, shrub, and tundra habitats at elevations that range upward to the edge of trees.

HABITS. Nothing is known of the habits of this newly discovered species. All but one of the specimens of *S. yukonicus* were captured in pitfall traps.

REMARKS. First described in 1997, the tiny shrew may be the world's smallest mammal.



Map 9. Distribution of *Sorex yukonicus*

INSECTIVORA: Soricidae

Key to the Small Rodents

1. • Hind legs considerably longer than frontlegs; tail very long in relation to body size, usually greater than 125 mm; infraorbital canal of skull large and oval; 4 upper cheek-teeth that includes a small premolar (DIPODIDAE) 2

• Frontlegs and hindlegs equal in size; tail length variable relative to total size; infraorbital canal smaller, being much wider at the top than at the bottom; 3 upper cheek-teeth (MURIDAE) 3

2. • Length of upper cheek-tooth row greater than 3.7 mm; incisive foramina longer than 4.7 mm; posterior portion of septum dividing the incisive foramina very thin ..... ***Zapus princeps*** (p. xx)

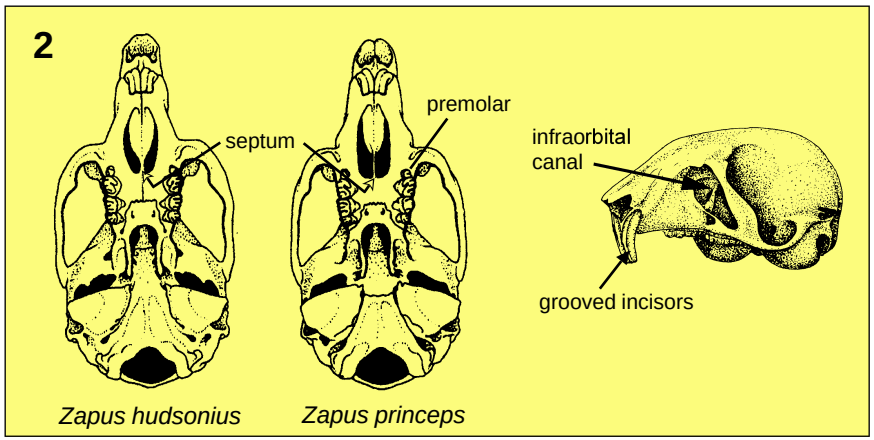
• Length of upper cheek-tooth row less than 3.7 mm; incisive foramina shorter than 4.7 mm; posterior portion of septum dividing the incisive foramina broad ..... ***Zapus hudsonius*** (p. xx)

3. • Mouse- and rat-like with a slender body, pointed snout, well-developed hind legs, large eyes, prominent ears, and a long tail; cheek-teeth cuspidate or, if cusp pattern not apparent, flat-crowned and prismatic not arranged as alternating triangles 4

• Vole-like with a stout, furry body, blunt snout, short legs, small eyes, ears frequently hidden by long pelage, and tail relatively short; cheek-teeth without rows of cusps on crown; crowns flat with alternating triangles or "puddles" filled with dentine and surrounded by enamel 7

4. • Cheek-teeth appearing prismatic and flat-crowned; tail well furred and bushy ..... ***Neotoma cinerea*** (p. XX)

• Cheek-teeth clearly cuspidate; tail without hair 5



5. • 2 rows of cusps running down the crowns of the tooth row ..... ***Peromyscus keeni*** (p. xx)

• 3 rows of cusps running down the crowns of the tooth row 6

6. • Total length greater than 300 mm; 1st upper cheek-tooth (M1) about equal to or less than combined length of M2 and M3 ..... ***Rattus norvegicus*** (p. xX)

• Total length less than 200 mm; M1 length greater than combined length of M2 and M3 ..... ***Mus musculus*** (p. xx)

7. • Tail very short, about as long as the hind foot; lower incisors set inward from the cheek-teeth, and ending in a horizontal projection opposite or in front of the socket of the last lower molar **8**

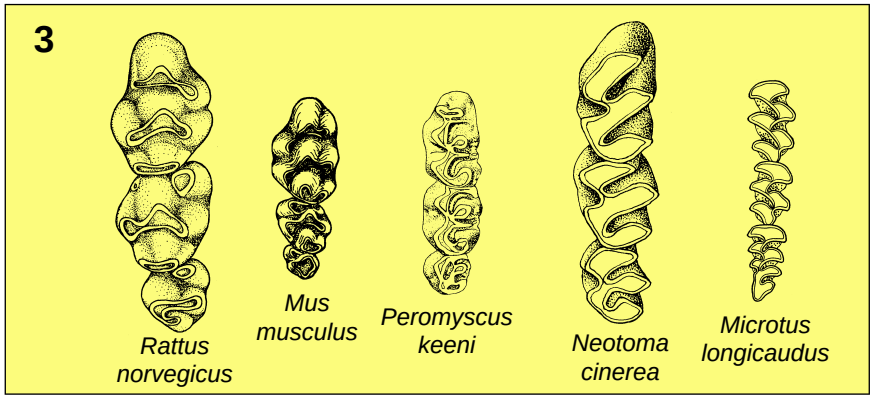
• Tail length variable but clearly extending past the hind feet when legs outstretched; lower incisors passing from the tongue to the lip sides of the cheek-teeth and ascending back to within or near the condylar process 10

8. • Pelage uniformly grizzled brown above, grayish below; upper incisors deeply grooved with projecting outeredges ..... ***Synaptomys borealis*** (p.xX)

• Pelage more colorful; upper incisors not grooved **9**

9. • Chestnut-brown above and without black stripe down back; cheek-teeth relatively simple with few loops; inner salient angles of upper molars and outer angles of lower molars smaller than those of the opposite side; robust skull lacking squamosal peg inside orbit ..... ***Lemmus trimucronatus*** (p. XX)

• In summer, buff-gray above with black stripe down back, buff-gray to white below, pale or tawny ruff across throat; turn all white and develop digging claws in winter (except on Unalaska Island); cheek-teeth complex with many loops; inner and outer salient angles approximately equal in size; prominent squamosal pegs project laterally forward into orbits of the skull ..... ***Dicrostonyx groenlandicus*** (p. xx)



10. • Pelage rust-reddish above; skull relatively rounded and light, zygomatic arches relatively slender and the mandibles week; outer angles of cheek-teeth rounded, without a “heel” projecting posteriorly on the last upper molar (M3) 11

• Pelage color not as above; skull relatively angular and more massive, zygomatic arches and mandibles more robust; outer angles of cheek-teeth pointed, with a “heel” projecting posteriorly on the M3 12

11. • Tail short, thick, with closely set bristly hairs; post-palatal bridge usually incomplete in adults, and always incomplete up through 1st year ... ***Clethrionomys rutilus*** (p. xx)

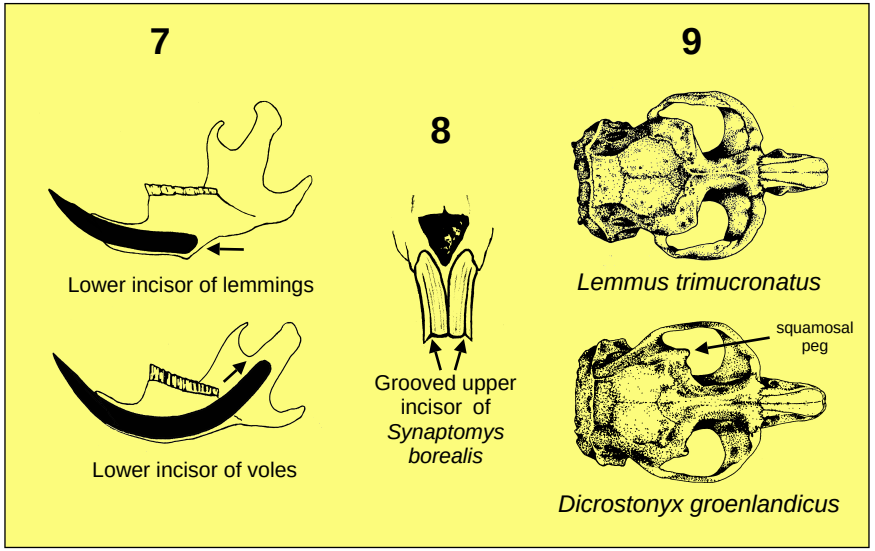
• Tail longer and more slender, with short hairs except at tip where hairs longer; post-palatal bridge always complete, even in half grown young ..... ***Clethrionomys gapperi*** (p.xx)

12. • Flanks and venter buffy in color; ear spot usually buff or tawny; tail very short (less than 28 mm) and heavily furred and tipped with stiff tawny hairs; skull light, long, narrow and flat; prominent interorbital keel in adults, with this region being depressed 13

• Pelage color not as above; tail longer (more than 28 mm); skull more rugged as less long, narrow and flat appearing; no prominent interorbital keel or depression 14

13. • Hind foot greater than 21.5 mm; known to occur only on St. Matthew and Hall islands, Bering Sea ..... ***Microtus abbreviatus*** (p. xx)

• Hind foot less than 21.5 mm; inhabits the mountains on the mainland ..... ***Microtus miurus*** (p xx)



14. • Adults exceptionally large (often 200+ mm in length, 100+ grams in weight); whisker area conspicuously rusty-yellowish in color ..... ***Microtus xanthognathus*** (p. xx)

• Adults smaller, without conspicuous rusty-yellow snout 15

15. • Cheek-teeth (usually black in color) rooted in adults; re-entrant angles on the inner side of the lower molars deeper than those on the outer side (Fig. 3) .... ***Phenacomys intermedius*** (p. xx)

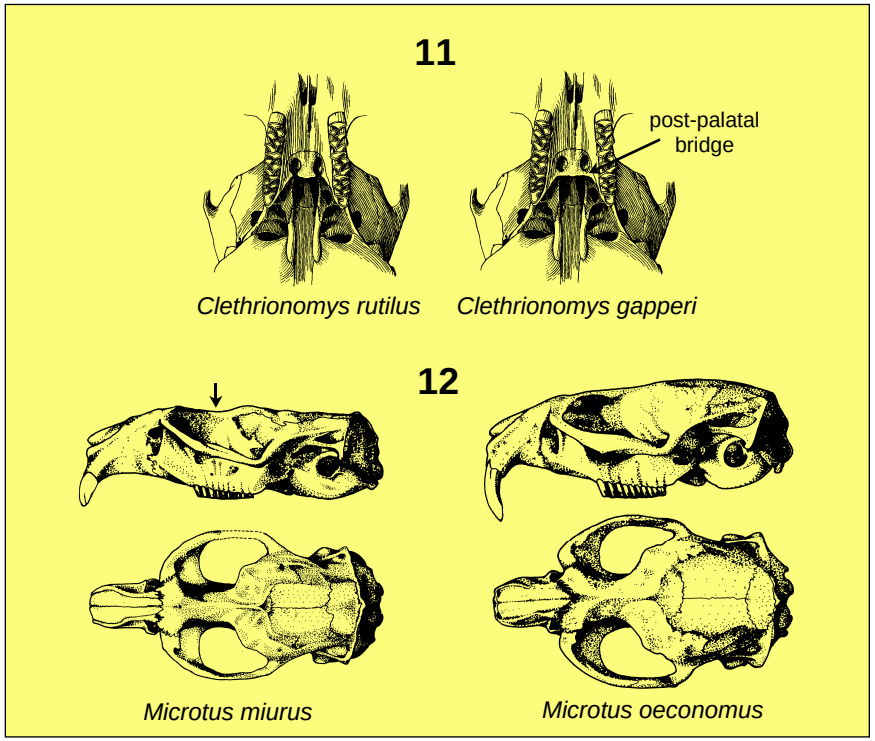
• Cheek-teeth not rooted in adults; re-entrant angles on the inner side of the lower molars approximately equal in depth 16

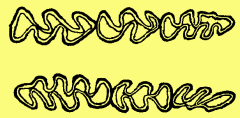
16. • Tail averaging 1/3 or more of total length ..... ***Microtus longicaudus*** (p. xx)

• Tail averaging less than 1/3 of total length **17**

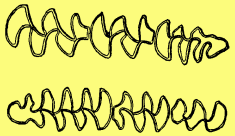
17. • 2nd upper molar (M2) with 4 closed triangles and a posterior loop .... ***Microtus pennsylvanicus*** (p. xx)

• M2 with 4 closed triangles and no posterior loop ..... ***Microtus oeconomus*** (p. xx)





Clethrionomys gapperi

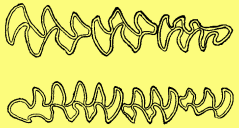


Microtus abbreviatus

Clethrionomys rutilus

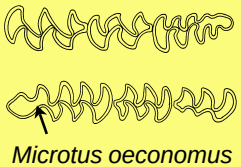
Microtus miurus

Dicrostonyx groenlandicus

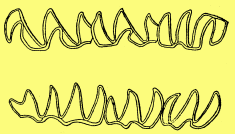


Microtus longicaudus

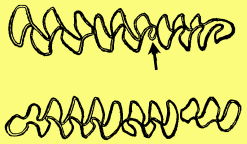
Lemmus trimucronatus



Microtus oeconomus



Synaptomys borealis



Microtus pennsylvanicus

Phenacomys intermedius

Microtus xanthognathus

Enamel patterns of left upper (top; front end to left) and left lower rows of cheek-teeth of 12 species of small rodents found in Alaska.

RODENT TOOTH PATTERNS

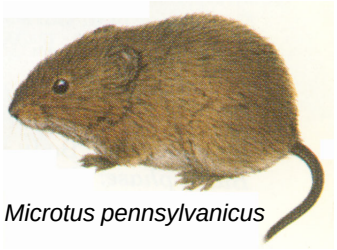
The Small Rodents

Clethrionomys gapperi

Microtus xanthognathus

Phenacomys intermedius

Microtus miurus



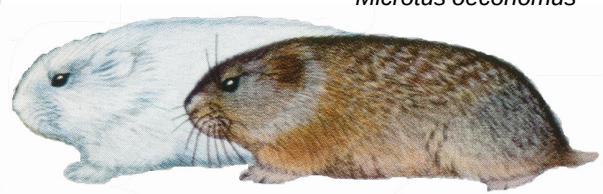
Microtus pennsylvanicus

Microtus longicaudus

Lemmus trimucronatus

Microtus oeconomus

Synaptomys borealis



Dicrostonyx groenlandicus

RODENTIA

Peromyscus keeni

Zapus hudsonius

Neotoma cinerea

Mus musculus

Rattus norvegicus

RODENTIA

Meadow Jumping Mouse

Zapus hudsonius

OTHER NAMES. *Dipus hudsonius*.

DESCRIPTION. Jumping mice are relatively small mice with extremely long (about 1-1/2 times longer than their body), wire-like, scaly tails, and large hind legs and feet (much larger than front feet). Pelage is coarse and wiry with brownish band on back, white belly and feet, and often yellowish to orange along sides. The ears are small and narrowly edged with buff or white. The skull is narrow in proportion to length; infraorbital canal large and oval; upper premolar present; upper incisors orange and grooved down the front surfaces.

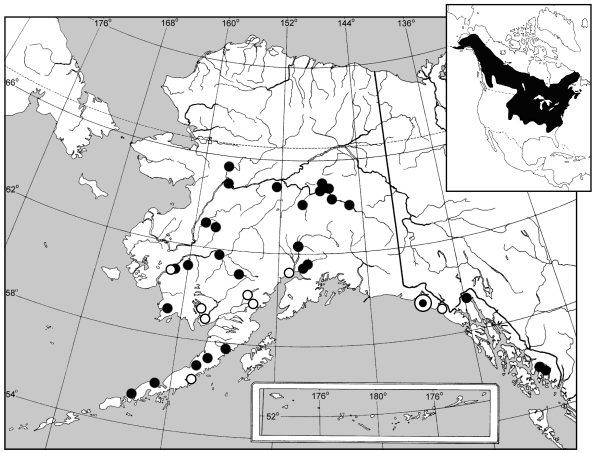
Total length: 187-227 (206) mm
Tail vertebrae: 107-136 (122) mm
Hind foot: 27-32 (30) mm
Ear: 11-14 (12.3) mm
Weight: 16.5-20.6 (19.1) grams

SIMILAR SPECIES. The very similar western jumping mouse (*Zapus princeps*) of mainland Southeast Alaska, is slightly larger in overall size and best separated from *Z. hudsonius* by cranial characters (page xx).

HABITAT. In summer, jumping mice are generally found in shrubby thickets and meadows bordering streams, ponds, and other openings. The presence of water is a necessity.

HABITS. Jumping mice are chiefly nocturnal but may become active on damp, cloudy afternoons. They breed soon after emergence from hibernacula around May or early June. In spring, half of their diet may be caterpillars and other arthropods. Later, seed heads, fruits and fungi make up most of their diet. They are adept swimmers and agile jumpers, capable of hopping up to 3 m at a single bound when alarmed. They accumulate fat prior to entering hibernation below ground in late September or early October. Jumping mice tend to avoid snap traps, but are readily captured in pitfall traps deep enough (or partial filled with water) to prevent their bounding escape.

REMARKS. A geographically isolated population of *Z. hudsonius* occurs on Revillagigedo Island in southern Southeast Alaska.



Map 10. Distribution of *Zapus hudsonius*

Western Jumping Mouse

Zapus princeps

OTHER NAMES. *Zapus saltator*.

DESCRIPTION. The external appearance of the western jumping mouse differs little from *Z. hudsonius*, with its exceptionally long and slender tail, large hind legs and feet, and yellowish-buff color, darker dorsal stripe and white underparts.

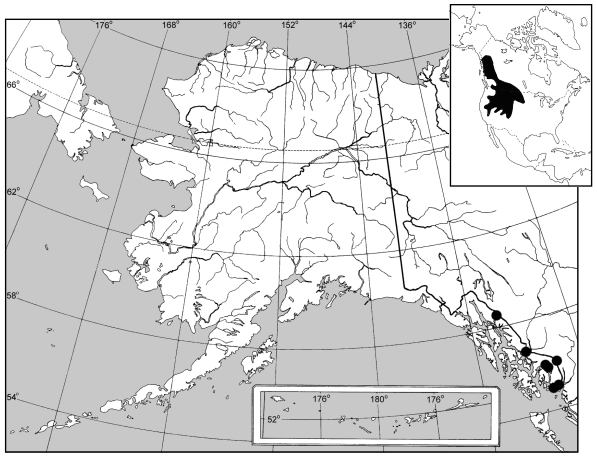
Total length: 206-258 (236) mm
Tail vertebrae: 139-158 (147) mm
Hind foot: 31-35 (33) mm
Ear: 12-16 (14) mm
Weight: 10.5-43.7 (20.25) grams

SIMILAR SPECIES. *Z. hudsonius* is smaller (total length usually less than 230 mm), has a less grizzled dorsal pelage, and the underparts tend to have a faint buffy wash over them. The most reliable characters separating the two are found in the skull (page xx).

HABITAT. This species, like its close relative *Z. hudsonius*, occurs from high mountain meadows to riparian streamsides, ponds, and marshes in the lowlands where moist soils support a dense canopy of grasses, forbs, and shrubs. They hibernate underground in a dry nest chamber during the winter months. During active months, they build globular nests in tall grass and at the base of tall shrub clumps.

HABITS. The life history and habits of *Z. princeps* are apparently similar to *Z. hudsonius*. Differences of preferred ecologic niche where the two species overlap have not been adequately studied.

REMARKS. Minimal levels of sequence divergence between individuals of *Z. princeps* from Southeast Alaska and individuals from southern Canada were found in a study of geographic variation in the mitochondrial cytochrome *b* gene.



Map 11. Distribution of *Zapus princeps*

Southern Red-backed Vole

Clethrionomys gapperi

OTHER NAMES. *Evotomys gapperi, E. phaeus, E. wrangeli*; boreal red-backed vole, Gapper's red-backed vole.

DESCRIPTION. The reddish-brown stripe down the back of this small vole usually contrasts with buffy-gray sides and white or gray underparts. Tail is short, about twice the length of the hind foot, slim, and scantily covered with short hairs. This genus has well-furred ears that perceptibly extend above the fur. Cheek-teeth are rooted in older individuals. Skull is relatively rounded and light, with post-palatal bridge of *C. gapperi* always complete, even in half grown young (page xx).

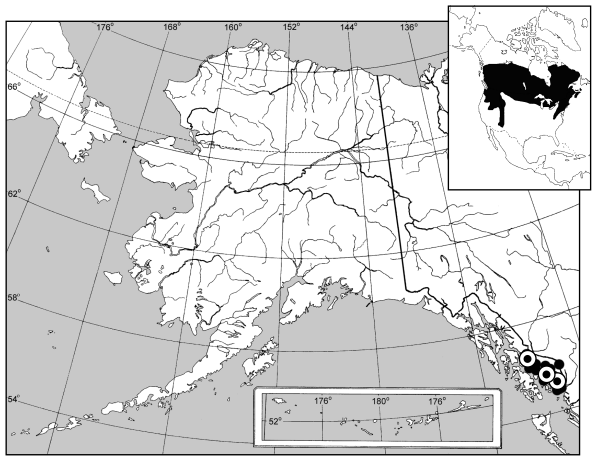
Total length: 130-157 (141) mm
Tail vertebrae: 30-44 (36.5) mm
Hind foot: 18-20 (19.4) mm
Ear: 8-19 (13.7) mm
Weight: 16-31.4 (24.6) grams

SIMILAR SPECIES. *C. rutilus* generally has a thicker, shorter tail that is covered with dense, bristly fur and brighter reddish color on its back. Post-palatal bridge of *C. rutilus* is usually incomplete. Voles in the genera *Microtus* and *Phenacomys* lack reddish stripe down the back and have round ears hidden or barely extending above their fur.

HABITAT. This vole is an inhabitant of the southern coastal forests of Southeast Alaska. They are found under shrubbery and amongst the litter covering the forest floor.

HABITS. This species is common, occasionally abundant. They do not construct elaborate runways. Their omnivorous feeding habits consists of a wide variety of seeds, fruits, leaves and fungi.

REMARKS. *C. gapperi* and *C. rutilus* are difficult to distinguish morphologically where the two come in contact along the mainland of Southeast Alaska, and there is a preliminary indication (based on the mitochondrial cytochrome *b* gene) that some gene flow may occur between species.



Map 12. Distribution of *Clethrionomys gapperi*

Northern Red-backed Vole

Clethrionomys rutilus

OTHER NAMES. *Clethrionomys dawsoni, Evotomys dawsoni*; Dawson red-backed vole, tundra redback vole.

DESCRIPTION. The summer pelage of *C. rutilus* has a bright rufous dorsal stripe running from head to tail (rarely dark brown or blackish); sides ochraceous, belly buffy or creamy white. Winter pelage is longer and silkier, and dorsal strip more contrastingly cinnamon-colored. Tail is short, thick, and covered with dense, bristly fur. Ears are rounded and well-furred, and extending well beyond the pelage. Skull is small, light, rounded, the zygomatic arches slender, mandible weak. Post-palatal bridge is incomplete (page xx). Cheek- teeth bear twin roots in adults.

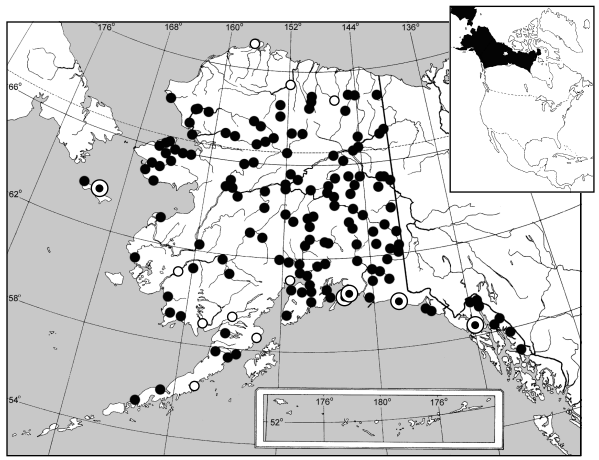
Total length: 118-151 (133) mm
Tail vertebrae: 25-36 (30.5) mm
Hind foot: 19-20 (19.4) mm
Ear: 13-18 (14.7) mm
Weight: 17-32.5 (26.1) grams

SIMILAR SPECIES. *C. gapperi*, a species restricted to southern Southeast Alaska, usually has a thinner, longer, less bristly tail; less bright, more brownish pelage on its back and sides; and a post-palatal bridge that is always complete (page xx).

HABITAT. This very common and periodically abundant vole has broad and flexibly habitat preferences within the northern boreal forest and shrub tundra.

HABITS. Red-backed voles eat a wide variety of foods, including leaves, seeds, fruits, mushrooms, lichens, and even some insects. They utilize surface runways of other species, and it is not unusual for them to enter human habitations. Red-backed voles are readily captured in a variety of baited and unbaited trap types.

REMARKS. This species also occurs in the taiga but not the tundra of Eurasia. In North America, inhabitants of the tundra tend to be larger and have brighter red pelage than taiga animals; litter sizes also tend to be larger in the tundra.



Map 13. Distribution of *Clethrionomys rutilus*

Northern Collared Lemming

Dicrostonyx groenlandicus

OTHER NAMES. *Dicrostonyx exsul, D. nelsoni, D. rubricatus, D. unalascensis*; varying lemming, hoofed lemming.

DESCRIPTION. In summer, the pelage of this lemming is buff-gray with black stripe down back, buff-gray to white below, pale or tawny ruff across throat. They turn all white and develop forked digging claws on digits 3 and 4 in winter (except on Unalaska Island). Tail is very short and well-haired. Soles of feet are densely furred and small ears entirely concealed in fur. Cheek-teeth complex with many loops; inner and outer salient angles approximately equal in size (page xx). Prominent squamosal pegs project laterally forward into orbits of the skull (page xx).

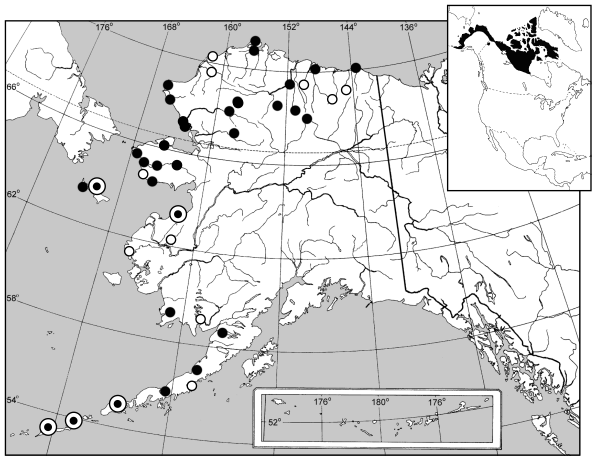
Total length: 110-177 (145) mm
Tail vertebrae: 10-20 (14) mm
Hind foot: 17-22 (xx) mm
Ear: xx-xx (xx) mm
Weight: 30-50 grams (summer); 50-112 g. (winter)

SIMILAR SPECIES. *Dicrostonyx* is the only rodent in North America that turns white in winter. *Lemmus* lacks black stripe down back. *Synaptomys* is brownish-gray with grooved upper incisors. Most voles have longer tails (usually greater than 25 mm).

HABITAT. An animal of the Arctic tundra zone, collared lemmings are generally found occupying higher, dryer, rockier tundra than *Lemmus*. In winter, they may retreat to lower meadows where the blanket of snow is thicker.

HABITS. Populations fluctuate dramatically between years. In summer, these lemmings occupy shallow burrows under the tundra sod. In winter, they place their grass nests on the surface of the ground under or in the center of a snowbank. Collared lemmings tend to avoid baited traps, and are best captured in unbaited snap traps and pitfall traps set at burrow openings and across runways.

REMARKS. The taxonomy and distribution of *Dicrostonyx* have been extremely problematic and remain unresolved. The number of species has ranged from a single holarctic species to 9 species in North America alone.



Map 14. Distribution of *Dicrostonyx groenlandicus*

Brown Lemming

Lemmus trimucronatus

OTHER NAMES. *Lemmus alascensis, L. sibiricus, L. harroldi, L. nigripes, L. yukonensis*; Siberian lemming, common lemming, black-footed lemming.

DESCRIPTION. The fur of the brown lemming is long and soft; tawny orange shading to chestnut-brown above, with grayish head and shoulders, buff-gray below. Feet silvery (hind feet black on St. George Island, Pribilof Islands). Tail stubby and colored like body. Ears small and hidden by thick fur. Soles of feet hairy. Cheek-teeth relatively simple with few loops; inner salient angles of upper molars and outer angles of lower molars smaller than those of the opposite side. Upper incisors prominent and not grooved.

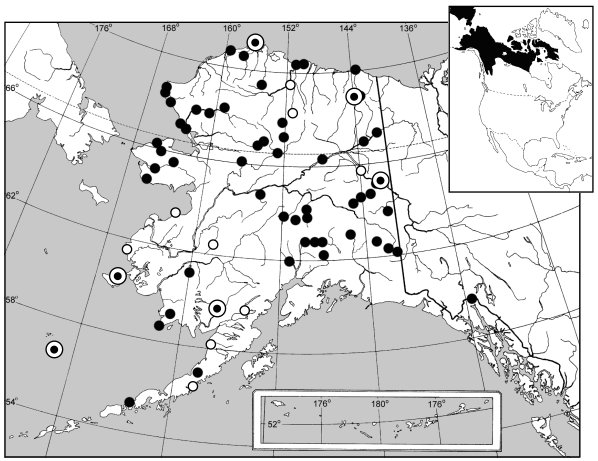
Total length: 122-160 (135) mm
Tail vertebrae: 15-23 (18) mm
Hind foot: 18-23 (29.5) mm
Ear: 12-14 (13) mm
Weight: 45-130 grams

SIMILAR SPECIES. *Dicrostonyx* has a dark median stripe down back, or is all white. *Synaptomys* is brownish gray with grooved incisors. Voles have unfurred soles of feet, not brightly colored, and have longer tails (usually greater than 25 mm).

HABITAT. This species occurs in a variety of arctic and alpine tundra habitats. Above treeline they are usually associated with wet sedge-grass tundra above treeline, and restricted to spruce bogs and wet meadows at lower elevations.

HABITS. Population levels of brown lemmings fluctuate widely between years, but unlike Norwegian lemmings (*L. lemmus*), brown lemmings do not migrate en masse during periods of super-abundance. Lemmings are most often captured in pitfall traps and in snap traps set at burrow entrances and across runways.

REMARKS. The taxonomy of Old World and New World *Lemmus* has been problematic. At least 4 circumpolar species are currently proposed, with populations in North America and far eastern Siberia together constituting a single species, *L. trimucronatus*.



Map 15. Distribution of *Lemmus trimucronatus*

Insular Vole

Microtus abbreviatus

OTHER NAMES. *Microtus fisheri*; St. Matthew Island vole.

DESCRIPTION. The insular vole is relatively large and short-tailed, with long fur that conceals their ears. Adults are brownish dorsally, have pale yellowish sides, rump, tips of the ears, and face, and a buff-colored belly.

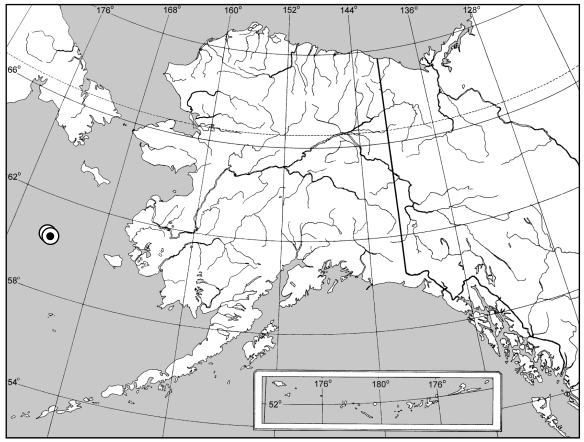
Total length: 136-176 (145) mm
Tail vertebrae: 25-32 (25.3) mm
Hind foot: 22-24 (xx) mm
Ear: xx-xx (xx) mm
Weight: 45-80 grams

SIMILAR SPECIES. *M. abbreviatus* is the only species of small mammal found on the St. Matthew's Island group in the Bering Sea. It appears to be closely related to and, in color and pattern, nearly indistinguishable from, the smaller-bodied singing vole, *M. miurus*, on the mainland.

HABITAT. Colonies are found most commonly in the moist lowlands and on the lower slopes of the islands, and in the *Elymus* association and driftwood along beach ridges. They live in burrows that are often dug near rocky outcroppings and near small streams. Their burrow systems may be extensive, with several openings to the surface.

HABITS. Populations appear to fluctuate considerably. In areas of high abundance, their high-pitched, musical alarm calls can frequently be heard when they are disturbed. Insular voles are fairly docile and easily handled.

REMARKS. A recent analysis of DNA sequence data found *M. abbreviatus* to be a sister (perhaps conspecific) taxon of *M. miurus*.



Map 16. Distribution of *Microtus abbreviatus*

Long-tailed Vole

Microtus longicaudus

OTHER NAMES. *Microtus mordax, M. vellerosus, M. coronarius*.

DESCRIPTION. A medium-sized vole characterized by a long, bicolored tail that is over half the combined length of the head and body. Fur grizzled grayish-brown to reddish brown above; grayish below; feet dusky white. Ears relatively small and mostly hidden by long fur. Skull relatively smooth; incisive foramina long and gradually tapering posteriorly.

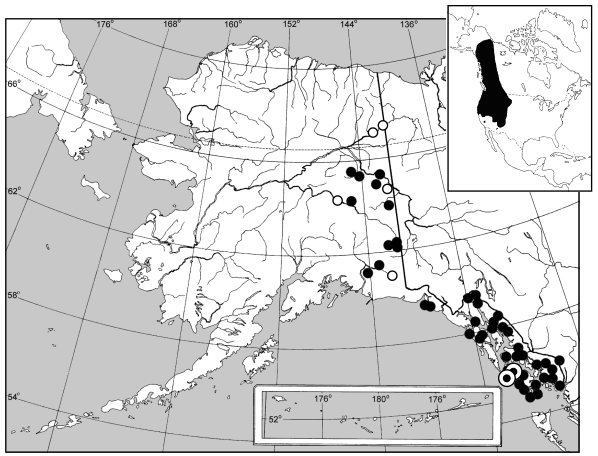
Total length: 137-232 (176) mm
Tail vertebrae: 47-83 (63) mm
Hind foot: 18-25 (21) mm
Ear: 10-17 (14) mm
Weight: 20-70 grams

SIMILAR SPECIES. Other sympatric voles have shorter tails. Second upper molar (M2) of *Microtus pennsylvanicus* has an extra posterior loop. Incisive foramina of *M. oeconomus* skull is short and constricted posteriorly, rather than long and gradually tapering.

HABITAT. This vole is an inhabitant of grassy forest openings and a variety of meadow and riparian habitats, from estuarine meadows at sea level to dry rocky slopes high up in the mountains.

HABITS. *M. longicaudus* is uncommon to periodically abundant. They tend to make few runways. They are readily captured in snap, live, and pitfall traps.

REMARKS. The large-bodied voles on Coronation, Warren and Forrester islands in Southeast Alaska were once considered a separate species, *M. coronarius*, the Coronation Island vole.



Map 17. Distribution of *Microtus longicaudus*

Singing Vole

Microtus miurus

OTHER NAMES. *Microtus cantator, M. gregalis, M. muriei*; Alaska haymouse, Alaska vole, Toklat vole.

DESCRIPTION. A small- to medium-sized vole with flanks and venter buffy in color; ear spots usually buff or tawny; frequently a buffy patch at base of the whiskers. Tail very short (less than 28 mm) and heavily furred and tipped with stiff tawny hairs. Claws relatively long and narrow. Ears small. Skull light, unusually narrow and flat, with prominent interorbital keel in adults, with this region being depressed (page xx).

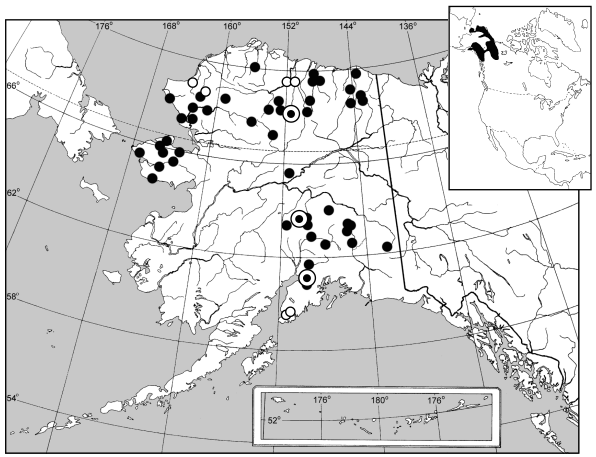
Total length: 101-155 (145) mm
Tail vertebrae: 19-40 (22) mm
Hind foot: 17-21 (18.3) mm
Ear: 12-15 (13) mm
Weight: 23-60 grams

SIMILAR SPECIES. M. *abbreviatus* on Hall and St. Matthew islands in the Bering Sea is a larger-bodied close relative of *M. miurus*. *Phenacomys* and other *Microtus* species are larger, have longer tails, white or gray venters, and smaller claws. Lemmings have shorter tails.

HABITAT. Singing voles inhabit a variety of alpine and arctic tundra habitats on well-drained sites, sometimes along streambanks. The burrow systems of this semi-colonial species are often associated with willows (*Salix*) and rocky areas.

HABITS. Singing voles can be moderately abundant in suitable habitat, but population densities vary considerably between years. Toward the end of summer, this species becomes more vocal (a high-pitched trill plus warning chirps) and caches piles of vegetation for winter use. This vole deposits excess soil next to the burrow entrance and frequently climb in low shrubs to forage.

REMARKS. M. *miurus* was briefly considered to be conspecific with the narrow-skulled vole, *M. gregalis*, of Siberia.



Map 18. Distribution of *Microtus miurus*

Tundra Vole

Microtus oeconomus

OTHER NAMES. *Microtus amakensis, M. elymocetes, M. innuitus, M. kadiacensis, M. macfarlani, M. operarius, M. unalascensis, M. sitkensis, M. yakutatensis*; northern vole, root vole.

DESCRIPTION. A medium- to large-sized (on some Alaska islands) vole, dusky gray to rich buff, tawny, cinnamon brown, or rusty brown above, paler on sides, white to dark buff wash below. Tail relatively short and markedly bicolored. Ears hidden in pelage. Skull strong and angular; the incisive foramina only moderately long and constricted to a slit posteriorly (page xx). Upper middle molar (M2) has four closed enamel triangles. The first lower molar (m1) has 4 median closed triangles, the 5th prism open and confluent with terminal loop (except on Baranof and Chichagof islands in Southeast Alaska, where 5th triangle is usually closed).

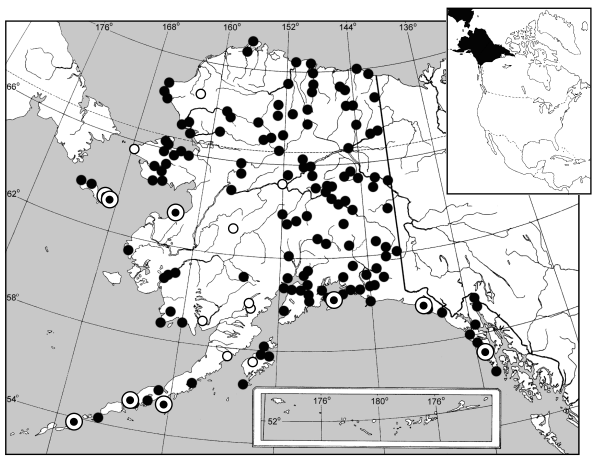
Total length: 129-226 (152) mm
Tail vertebrae: 31-53 (37) mm
Hind foot: 16-25 (19) mm
Ear: 10-16 (13) mm
Weight: 25-80 (49) grams

SIMILAR SPECIES. Although the pelage of meadow voles tend to lack the yellowish cast found in tundra voles (especially when comparing young animals), the two species are usually so similar in external appearance that positive identification requires looking under magnification to see if there is the extra rounded posterior loop on the lingual side of the upper middle molar (M2) that is present in *M. pennsylvanicus* and absent in *M. oeconomus*. *M. miurus* is smaller, buff colored, and shorter tailed. *M. longicaudus* has a much longer tail. *M. xanthognathus* is a very large vole that has a distinctive reddish-brown nose and darker belly.

HABITAT. Tundra voles are found in a variety of tundra and meadow habitats at various elevations across their range.

HABITS. Tundra voles are periodically abundant, and travel in well-developed runways.

REMARKS. This vole is widely distributed across Eurasia, but is restricted to Alaska and NW Canada in North America.



Map 19. Distribution of *Microtus oeconomus*

Meadow Vole

Microtus pennsylvanicus

OTHER NAMES. *Arvicola drummondii, Microtus admiraltiae*.

DESCRIPTION. A medium-sized vole with long, soft, dense fur that hides the rounded ears; pelage of adults varies from grizzled gray to grizzled rusty-brown above and dusky gray to silvery below (in winter belly more whitish); immature voles darker than adults. Tail about twice the length of the foot and only faintly bicolored; feet gray. Skull relatively rectangular and heavily constructed; incisive foramina long and not constricted posteriorly. Tooth pattern of upper middle molars (M2) with 4 closed triangles and a rounded 5th posterior enamel loop is diagnostic (page xx).

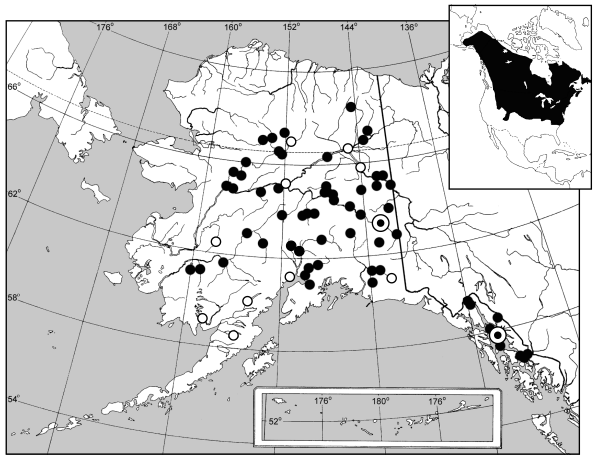
Total length: 128-158 (145) mm
Tail vertebrae: 32-47 (39) mm
Hind foot: 18-21 (19) mm
Ear: 12-15 (13) mm
Weight: 21-50 grams

SIMILAR SPECIES. *M. pennsylvanicus* is distinguished from other Alaskan voles, including the very similar *M. oeconomus*, by the an extra posterior loop on M2.

HABITAT. A species of Alaska's taiga zone, meadow voles prefer wet meadows, grassy riparian areas, and open grassland.

HABITS. Meadow vole populations are periodically abundant in suitable habitat. They build extensive runaway networks marked occasional with communal toilet areas and the clippings of grass and sedge stems. They are socially aggressive and pugnacious. They readily enter water and swim with ease.

REMARKS. This vole has the broadest range across North America of any small mammal. The numerous subspecies currently recognized (4 in Alaska alone) are in need of a modern revision.



Map 20. Distribution of *Microtus pennsylvanicus*

Taiga Vole

Microtus xanthognathus

OTHER NAMES. Chestnut-cheeked vole, yellow-cheeked vole, yellow-nosed vole.

DESCRIPTION. A very large vole with a prominent chestnut or rusty yellow patch on the sides of the nose and edges of the ears. Upper body dark sepia brown and heavily lined with coarse black hairs on back; underparts smoky gray. Juveniles are darker, more reddish brown. Tail nearly twice as long has hind foot and indistinctly bicolored: blackish above, dusky gray below. Adult males have a pair of glands on their flanks. Skull is large and robust; nasals and incisive foramina long and narrow.

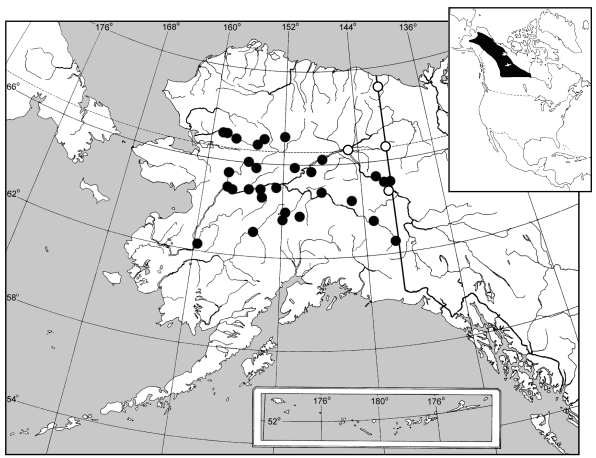
Total length: 150-224 (182) mm
Tail vertebrae: 32-48 (40) mm
Hind foot: 22-30 (25) mm
Ear: 15-24 (19) mm
Weight: 40-170 grams.

SIMILAR SPECIES. This species can be distinguished from other *Microtus* by its large size and distinct chestnut-colored snout. *Lemmus* has a much shorter tail and lacks a chestnut nose patch.

HABITAT. Communal groups of taiga voles inhabit fire-successional and riparian, boreal, sphagnum forest habitats near streams and other moist areas. The availability of an abundant supply of rhizomes of horsetail (*Equisetum*) and fireweed (*Epilobium*) for winter food and good burrowing conditions are major requirements of taiga voles.

HABITS. Taiga voles are colonial and undergo major population fluctuations. They are active day and night and maintain an extensive network of surface and underground runways. Burrow entrances are often marked with large deposits of excavated soil. When alarmed, this species emits a high-pitched squeak or whistle.

REMARKS. This species preference in interior Alaska for recently burned, spruce forest results in their populations being ephemeral, patchy, and unpredictable in distribution.



Map 21. Distribution of *Microtus xanthognathus*

Bushy-tailed Woodrat

Neotoma cinerea

OTHER NAMES. *Neotoma occidentalis, N. saxamans*; bushy-tailed packrat.

DESCRIPTION. A large, squirrel-like rodent with a long, bushy and flattened tail. Fur is long and soft; upperparts grizzled pale grayish to blackish; belly, feet, and underside of tail whitish. Males with prominent mid-ventral and smelly musk glands covered with stiff, matted hairs. Eyes, ears, and whiskers prominent. Skull long and narrow, with two prominent temporal ridges with an intervening depression; cheek-teeth rooted and moderately high crowned.

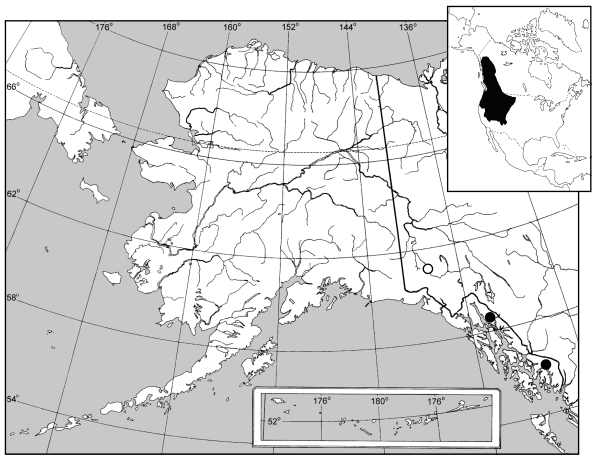
Total length: 292-470 mm (379 males, 356 females)
Tail vertebrae: 120-223 mm (165 males, 155 females)
Hind foot: 33-52 (xx) mm
Ear: xx-xx (xx) mm
Weight: 166-585 grams (337 males, 275 females)

SIMILAR SPECIES. The Old World brown rat has a fur-less, scaly tail and dark underparts.

HABITAT. Woodrats are found in rocky situations and occasionally in deserted buildings and mine shafts, from sea level to the very top of mountains.

HABITS. This "pack rat" builds large, bulky dens by accumulating sticks, bones, and other material in rock crevices, under logs, and in abandoned buildings. Toilet areas and white- stained rocks are often evident nearby. They will engage in a hindfoot-stomping behavior when alarmed.

REMARKS. Alaska's only native rat is restricted to the coastal mainland in the southeast region of the state. This species should be looked for in the eastern-most Wrangell-St. Elias Mountains.



Map 22. Distribution of *Neotoma cinerea*

Keen's Mouse

Peromyscus keeni

OTHER NAMES. *Peromyscus hylaeus, P. maniculatus, P. sitkensis*; deer mouse, forest deer mouse, northwestern deer mouse, Sitka mouse, Sitka deer mouse.

DESCRIPTION. A slender mouse with prominent naked ears and long whiskers. Upperparts reddish-brown to dark brown (grayish in young), underparts white. Tail moderately long, short-haired, slender, sharply bicolored, white below. Skull relatively light, delicate, with long rostrum; cheek-teeth with two rows of little cusps running down the crowns of each tooth row.

Total length: 181-230 (210) mm
Tail vertebrae: 92-114 (109) mm
Hind foot: 21-26 (24) mm
Ear: 15-20 (17) mm
Weight: 21-41 grams

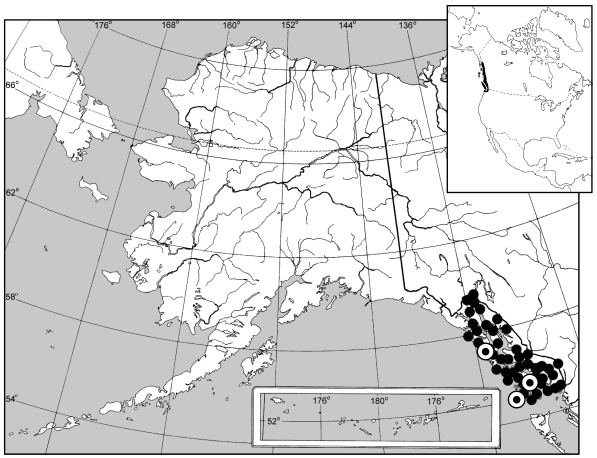
SIMILAR SPECIES. Adult *Peromyscus maniculatus* of adjacent Canada are smaller, lighter colored, and shorter tailed (less than 100 mm). Jumping mouse (*Zapus*) are smaller and have exceptionally large hind feet and a very long tail.

HABITAT. *P. keeni* inhabits a wide variety of habitats at various elevations in the rainy, coastal forests of southeastern Alaska.

HABITS. Keen's mice are common and ubiquitous throughout their Alaska range. They commonly invade human dwellings, and have been observed climbing about high up in the forest canopy.

REMARKS. Until recently, 2 species and 5 subspecies of *Peromyscus* were recognized in Alaska. All are now included under the species name, *P. keeni*, which was recognized as a senior synonym. Additional study is needed that includes samples from across southeast Alaska and neighboring Canada.

A population of the closely-related deer mouse, *Peromyscus maniculatus*, was unintentionally introduced to and is now established on Shemya Island in the western Aleutians.



Map 23. Distribution of *Peromyscus keeni*

Western Heather Vole

Phenacomys intermedius

OTHER NAMES. Mountain phenacomys.

DESCRIPTION. The heather vole has long and lax fur along its back that is grizzled grayish-brown in color; belly dull to silvery gray. Tail proportionally short, wire-thin, and bicolored; feet silvery gray. Cheek-teeth usually black in color. Deep re-entrant angles of the lower molars diagnostic (page xx).

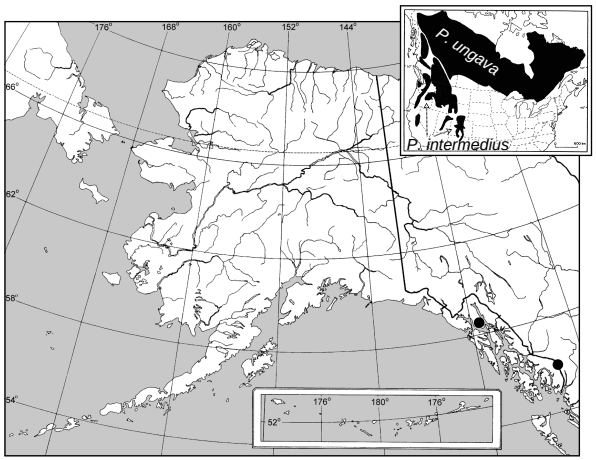
Total length: 122-155 (138) mm
Tail vertebrae: 26-41 (33) mm
Hind foot: 17-21 (18) mm
Ear: 11-17 (12) mm
Weight: 24-40 grams

SIMILAR SPECIES. The heather vole has been called the "deceiver" mouse because of its close resemblance to some species of *Microtus*, including young meadow voles (*M. pennsylvanicus*). The slender, silvery tail and hind feet of *Phenacomys* are usually distinctive. The eastern heather vole, *P. ungava mackenzii*, of northern British Columbia and southern Yukon has a yellowish face region rather than gray.

HABITAT. This vole is an inhabitant of mountainous regions, typically at higher elevations near or above timberline. They are most often found in open coniferous forest, riparian areas, forest edge, and moist alpine and subalpine meadows, and are usually associated with habitats with low-lying scrub including blueberry, bearberry, and dwarf willows.

HABITS. Heather voles do not make runways of their own. They cache small piles of leaves and fruits near burrow entrances, amongst rocks and inside stumps. They can be extremely docile when handled. The species tends to avoid baited snap traps and are more readily captured in pitfall traps.

REMARKS. The taxonomic relationship among eastern (as *P. ungava*) and western (as *P. intermedius*) populations remains unresolved. Heather voles should be looked for in the southern mountains of extreme east-central Alaska, and throughout alpine areas of mainland and insular Southeast Alaska.



Map 24. Distribution of *Phenacomys intermedius* in Alaska

Northern Bog Lemming

Synaptomys borealis

OTHER NAMES. *Mictomys borealis, Synaptomys dalli, S. truei, S. wrangeli*; lemming mouse.

DESCRIPTION. A small, vole-like rodent, with a very short (about as long as hind foot), bicolored tail; upper parts and sides dark brown to grizzled gray; underparts pale gray; feet grayish to almost black. Sparse covering of buffy-orange hairs at bases of the inconspicuous ears. Males often have a patch of white hair on each flank. Skull with very short rostrum; lower cheek-teeth lacking outer re-entrant angles (page xx); upper incisors grooved and often with the outer corners projecting in a sharp point (page xx).

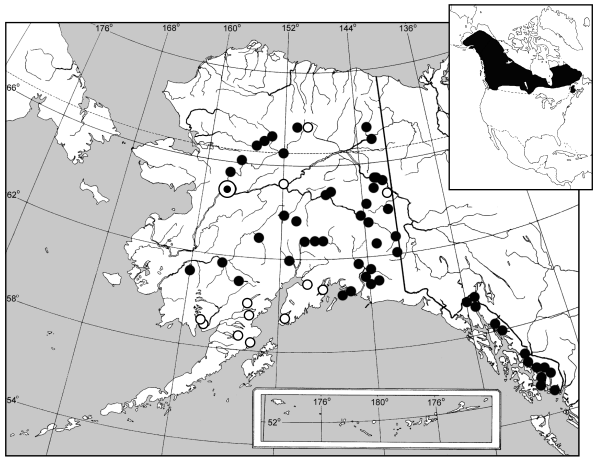
Total length: 104-137 (117) mm
Tail vertebrae: 17-25 (21) mm
Hind foot: 18-21 (19) mm
Ear: 12-15 (13) mm
Weight: 19-41.8 (28.7) grams

SIMILAR SPECIES. *Lemmus* is not uniformly brownish-gray above, and lacks grooved upper incisors. Other vole-like animals have longer tails and ungrooved incisors.

HABITAT. Northern bog lemmings are generally restricted to open habitats in the boreal and coastal forest zones of Alaska. They prefer damp meadows, marshes, bogs, and fens that have an abundance of grasses, sedges, mosses, and other low vegetation.

HABITS. This species is usually uncommon to rare across its range, but can become numerous and less localized some years. They dig short underground burrows and leave small piles of feces and plant cuttings along their runways through the vegetation. The use of pitfall traps has greatly increased our knowledge of this species.

REMARKS. Some authors consider *Mictomys* the appropriate generic name for this North American species.



Map 25. Distribution of *Synaptomys borealis*

House Mouse

Mus musculus

OTHER NAMES. M*us domesticus*.

DESCRIPTION. A small mouse with a pointed head, obvious ears, and a long scaly tale about the same color above and below and about same length as body. Fur fairly short, grayish-brown to yellowish-brown above, nearly as dark below. Skull small (less than 30 mm) with ungrooved upper incisors; cheek-teeth with 3 rows of cusps running down the crowns of the tooth row, and length of first upper molar (M1) greater than the combined length of M2 and M3 (page xx).

Total length: 130-198 (xxx) mm
Tail vertebrae: 63-102 (xx) mm
Hind foot: 14-21 (xx) mm
Ear: xx-xx (xx) mm
Weight: 18-23 grams

SIMILAR SPECIES. Deer mice (*Peromyscus keeni* and *P. maniculatus*) have white bellies. Jumping mice (*Zapus*) have white underparts, and exceptionally long tails and hind feet.

HABITAT. This introduced species is usually found closely associated with human habitations and adjacent farmland.

HABITS. House mice are colonial and social. They build nests of grasses and other materials in and under buildings.

REMARKS. Originally from Asia, this commensal species has been occasionally reported from several Alaskan settlements on the mainland and on Baranof, Kodiak, Unalaska, Kiska, and St. Paul islands.

Brown Rat

Rattus norvegicus

OTHER NAMES. *Mus norvegicus*; Norway rat, barn rat.

DESCRIPTION. A large, stocky rat with a naked tail and prominent ears; grizzled brown above, grayish below. Tail thick, brown, and scaly; somewhat shorter than the body. Skull with prominent brow ridges that extend from the interorbital constriction to the back of the skull; cheek-teeth in 3 rows of cusps running down the crowns of the tooth row; length of first unnotched upper molar (M1) about equal to or less than the rest of the cheek-teeth row (page xx).

Total length: 316-460 (xxx) mm
Tail vertebrae: 122-215 (xxx) mm
Hind foot: 30-45 (xx) mm
Ear: xx-xx (xx) mm
Weight: 195-485 grams

SIMILAR SPECIES. The woodrat (*Neotoma*) has a white belly and feet, and a hairy tail. The black rat (*Rattus rattus*), which has yet to be recorded in Alaska (but is found along coastal Canada), is sooty black or brown, has a tail longer than its head and body, brow ridges that do not extend all the way down to the back of the skull, and an M1 with distinct notches on the first row of cusps.

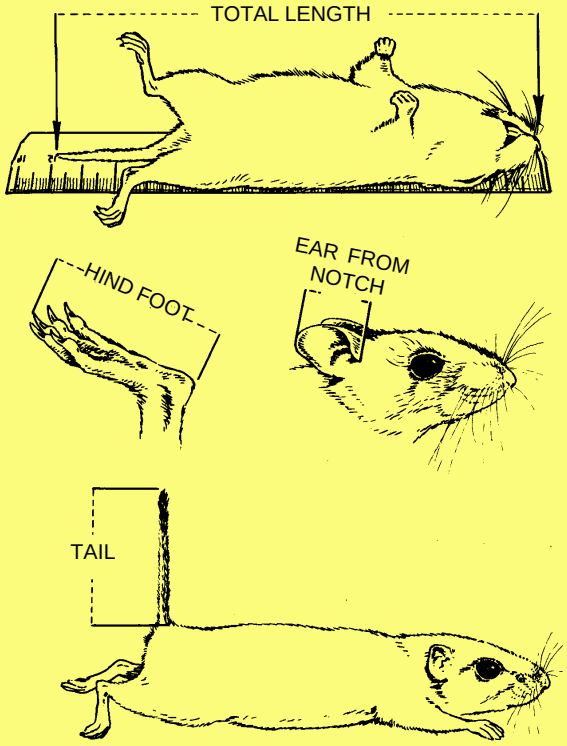
HABITAT. This species is usually associated with human-created habitats; feral populations also occur on islands and along beaches.

HABITS. Brown rats are colonial and prolific.

REMARKS. Brown rats have been introduced to some towns and numerous islands in Alaska.

RODENTIA: Old-World Muridae

Standard Body Measurements



TOTAL LENGTH (TL). Measured (in millimeters) from the tip of nose pad to top of fleshy part of tail, excluding hairs that project beyond.

TAIL (T). Bend tail at right-angle with body and measure from bend on back to tip of the fleshy part of tail, excluding hairs.

HIND FOOT (HF). With toes out straight, measure the distance from tip of longest claw to heal.

EAR FROM NOTCH (EFN). Insert end of rule in notch at bottom of ear and measure to distalmost border of fleshy part of ear.

WEIGHT (MASS). Measure (in grams) with either hand-held or electronic scale.